

## MUSSEL CWCS SPECIES (46 SPECIES)

Common name	Scientific name
<a href="#">Bleufer</a>	<i>Potamilus purpuratus</i>
<a href="#">Butterfly</a>	<i>Ellipsaria lineolata</i>
<a href="#">Catspaw</a>	<i>Epioblasma obliquata obliquata</i>
<a href="#">Clubshell</a>	<i>Pleurobema clava</i>
<a href="#">Cracking Pearlymussel</a>	<i>Hemistena lata</i>
<a href="#">Creek Heelsplitter</a>	<i>Lasmigona compressa</i>
<a href="#">Cumberland Bean</a>	<i>Villosa trabalis</i>
<a href="#">Cumberland Elktoe</a>	<i>Alasmidonta atropurpurea</i>
<a href="#">Cumberland Moccasinshell</a>	<i>Medionidus conradicus</i>
<a href="#">Cumberland Papershell</a>	<i>Anodontoides denigratus</i>
<a href="#">Cumberlandian Combshell</a>	<i>Epioblasma brevidens</i>
<a href="#">Dromedary Pearlymussel</a>	<i>Dromus dromas</i>
<a href="#">Elephantear</a>	<i>Elliptio crassidens</i>
<a href="#">Elktoe</a>	<i>Alasmidonta marginata</i>
<a href="#">Fanshell</a>	<i>Cyprogenia stegaria</i>
<a href="#">Fat Pocketbook</a>	<i>Potamilus capax</i>
<a href="#">Fluted Kidneyshell</a>	<i>Ptychobranthus subtentum</i>
<a href="#">Green Floater</a>	<i>Lasmigona subviridis</i>
<a href="#">Kentucky Creekshell</a>	<i>Villosa ortmanni</i>
<a href="#">Little Spectaclecase</a>	<i>Villosa lienosa</i>
<a href="#">Littlewing Pearlymussel</a>	<i>Pegias fabula</i>
<a href="#">Longsolid</a>	<i>Fusconaia subrotunda</i>
<a href="#">Mountain Creekshell</a>	<i>Villosa vanuxemensis vanuxemensis</i>
<a href="#">Northern Riffleshell</a>	<i>Epioblasma torulosa rangiana</i>
<a href="#">Orangefoot Pimpleback</a>	<i>Plethobasus cooperianus</i>
<a href="#">Oyster Mussel</a>	<i>Epioblasma capsaeformis</i>
<a href="#">Pink Mucket</a>	<i>Lampsilis abrupta</i>
<a href="#">Pocketbook</a>	<i>Lampsilis ovata</i>
<a href="#">Purple Lilliput</a>	<i>Toxolasma lividus</i>
<a href="#">Pyramid Pigtoe</a>	<i>Pleurobema rubrum</i>
<a href="#">Rabbitsfoot</a>	<i>Quadrula cylindrica cylindrica</i>
<a href="#">Rayed Bean</a>	<i>Villosa fabalis</i>
<a href="#">Ring Pink</a>	<i>Obovaria retusa</i>
<a href="#">Rough Pigtoe</a>	<i>Pleurobema plenum</i>

[Round Hickorynut](#)  
[Salamander Mussel](#)  
[Scaleshell](#)  
[Sheepnose](#)  
[Slabside Pearlymussel](#)  
[Slippershell Mussel](#)  
[Snuffbox](#)  
[Spectaclecase](#)  
[Tan Riffleshell](#)  
[Tennessee Clubshell](#)  
[Texas Lilliput](#)  
[Winged Mapleleaf](#)

*Obovaria subrotunda*  
*Simpsonaias ambigua*  
*Leptodea leptodon*  
*Plethobasus cyphus*  
*Lexingtonia dolabelloides*  
*Alasmidonta viridis*  
*Epioblasma triquetra*  
*Cumberlandia monodonta*  
*Epioblasma florentina walkeri*  
*Pleurobema oviforme*  
*Toxolasma texasiensis*  
*Quadrula fragosa*

**CLASS BIVALVIA**

**Bleufer**

*Potamilus purpuratus*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	E	G5	S1	G5	S1

**G-Trend** Stable

**G-Trend** This species is listed as secure from most of its range. However, it is

**Comment** apparently vulnerable in the eastern part of its range from Georgia north to Kentucky (NatureServe 2004)

**S-Trend** Decreasing

**S-Trend** This species is listed as sporadic from most of its range (Cicerello and Schuster 2003)

**Habitat /** Small streams to large rivers and backwater areas in silt, mud, sand, and gravel

**Life History** including the lower Ohio and Mississippi River (Cicerello and Schuster 2003, Oesch 1995, Cummings and Mayer 1992). The freshwater drum is the only known host (Watters 1994). The species' habitat is generally limited in Kentucky to the Coastal Plain Province, which is only present in extreme western portion of the state.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. The lower Obion Creek and Mississippi River oxbows/slackwater in extreme western Kentucky (Condition: partially supporting).

**Guilds** Large rivers in slackwater.

**Statewide** [Bleufer.pdf](#)

**Map**

## Conservation Issues

Aquatic habitat degradation

2A Navigational dredging/Commercial dredging

2D Woody debris removal

2E Stream channelization/ditching

Point and non-point source pollution

4C Toxic chemical spills

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

4K Industrial waste discharge/runoff

**CLASS BIVALVIA**

**Butterfly** *Ellipsaria lineolata*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	N	G4	S4S5	G4	S4

**G-Trend** Decreasing

**G-Trend** Exirpated to imperiled in over 60% of its range (NatureServe 2004).

**Comment**

**S-Trend** Decreasing

**S-Trend** Occasional to nearly sporadic statewide (Cicerello and Schuster 2003)

**Comment**

**Habitat /** Medium to large rivers in sand and gravel with good current (Cicerello and

**Life History** Schuster 2003, Cummings and Mayer 1992).

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Lower Barren and Lower Green
  2. Ohio River mainstem
  3. Lower Tennessee and Cumberland Rivers

Habitat in these areas range from shallow runs to pools where the host, freshwater drum, green sunfish and sauger can be found. Overall habitat condition is generally 50 to 90% fully supporting.

**Guilds** Large rivers in current.

**Statewide** [Butterfly.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Butterfly**

*Ellipsaria lineolata*

### **Conservation Issues**

Aquatic habitat degradation

2A Navigational dredging/Commercial dredging

2D Woody debris removal

2E Stream channelization/ditching

Biological/ consumptive uses

5D Competition from introduced/invasive or native species

Point and non-point source pollution

4C Toxic chemical spills

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

4K Industrial waste discharge/runoff

**CLASS BIVALVIA**

**Catspaw**

*Epioblasma obliquata obliquata*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	E	G1T1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** E. obliquata obliquata is thought to be reproducing only in Killbuck Creek,

**Comment** Ohio. Only 15 live individuals were found in 1994. Three extant populations of E. obliquata obliquata are thought to exist; one in the Green River in Kentucky, the Cumberland River in Tennessee, and the Killbuck Creek in Ohio (Hoggarth et al. 1995). Problems associated with land-use in the Killbuck Creek watershed threaten the E. obliquata obliquata population (Hoggarth et al. 1995). It was not found in the heavily modified portion of Killbuck Creek that lacked wooded riparian corridors or had significant erosion problems. Has been extirpated from a large portion of its range. Historical distribution is reasonably well known. Given the discovery of the Killbuck Creek population in 1994 (Hoggarth et al. 1995) additional survey work in areas likely to support this species is warranted. Periodic status surveys are needed to monitor changes in the remaining populations of this mussel.

**S-Trend** Decreasing

**S-Trend** Possibly extirpated. Formerly in the Ohio River and the Green River to the

**Comment** Licking River (Cicerello and Schuster 2003). Critically imperiled.

**Habitat /** Inhabits large to medium river systems in sand and gravel substrates in runs and

**Life History** riffles.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Presumed to be extirpated, but may exist in the lower Green River or the lower Licking River (Condition: partially supporting).

**Guilds** Large rivers in current.

**Statewide** [Catspaw.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Catspaw**

*Epioblasma obliquata obliquata*

### **Conservation Issues**

Aquatic habitat degradation

- 2C Construction/Operation of impoundments (migration barrier)
- 2F Riparian zone removal (Agriculture/development)
- 2G Water level fluctuations

Biological/ consumptive uses

- 5C Biological collection (overharvest)

Point and non-point source pollution

- 4B Waste water discharge (e.g., sewage treatment)
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

- 1B Agriculture
- 1C Road construction
- 1D Urbanization/Development General Construction

**CLASS BIVALVIA**

**Clubshell** *Pleurobema clava*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE,XN	E	G2	S1	G2	S1

**G-Trend** Decreasing

**G-Trend** Historically, it was distributed across nine states in the Wabash, Ohio,

**Comment** Kanawha, Kentucky (Danglade 1922), Green, Monongahela, and Alleghany Rivers and their tributaries. Listed as occurring in the St. Peter's River in Minnesota and from Nebraska by Simpson (1914), however these records are probably in error. It is currently known from 12 streams in six states: Tippecanoe River in Indiana; Fish Creek in Ohio and Indiana; West Branch of the St. Josephs River in Ohio and Michigan; Walhonding River in Ohio; East Fork of the West Branch of the St. Josephs River in Michigan; Little Darby Creek in Ohio; French Creek in Pennsylvania and the Elk River in West Virginia. It is extirpated from Alabama, Illinois, Tennessee (U.S. Fish and Wildlife Service) and possibly New York (Strayer and Jirka 1997) (NatureServe 2004)

**S-Trend** Decreasing

**S-Trend** Sporadic in the Upper Green River.

**Comment**

**Habitat /** Despite the type locality of Lake Erie (apparently in error), this is a species of  
**Life History** small to medium-sized rivers and streams. Ortmann (1919) remarked that it was  
"a rare shell, and never found in great numbers. It is found mostly in sand and  
fine gravel, and is deeply buried." Hoggarth and Watters have found live  
individuals completely buried with the posterior shell margin facing up in  
sand/gravel substrate in riffle/run situations in less than 1.5 feet of water  
(NatureServe 2004). This seems to be the habitat of choice. Because it buries  
itself beneath the substrate, it is rarely found alive even in places where it is  
believed to occur in some numbers (NatureServe 2004). Stansbery (OSU  
museum curator) believed that various pesticides were at least partially  
responsible for the overall decrease in the fauna of areas in which *P.clava* was  
present. The introduced zebra mussel could also pose a significant threat  
(NatureServe 2004).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. upper Green River, where populations seem to be recruiting (Condition:  
partially supporting).

**Guilds** Medium to large streams.

## **CLASS BIVALVIA**

### **Clubshell**

*Pleurobema clava*

**Statewide** [Clubshell.pdf](#)

### **Map**

## **Conservation Issues**

### Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging. NatureServe 2004
- 2C Construction/Operation of impoundments (migration barrier). NatureServe 2004

### Biological/ consumptive uses

- 5D Competition from introduced/invasive or native species. NatureServe 2004
- 5H Isolated populations (low gene flow). NatureServe 2004

### Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts . NatureServe 2004
- 4B Waste water discharge (e.g., sewage treatment). NatureServe 2004
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. NatureServe 2004
- 4K Industrial waste discharge/runoff. NatureServe 2004

**CLASS BIVALVIA**

**Cracking Pearlymussel**

*Hemistena lata*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
LE,XN	X	G1	SX	G1	S1

**G-Trend** Decreasing

**G-Trend** Originally inhabited the Ohio, Cumberland, and Tennessee river systems. It has

**Comment** been extirpated from most of its former range but some viable populations may persist in the upper Clinch River in Tennessee (Parmalee and Bogan 1998) (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Extirpated. Formerly in the Ohio, Green, Upper Cumberland, and Kentucky

**Comment** Rivers.

**Habitat /** Abundant in sand, gravel, and cobble substrates in swift currents or mud and

**Life History** sand in slower currents (Gordon and Layzer 1989).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Most likely extirpated from Kentucky, but may exist in the Upper Green River (Condition: partially supporting).

**Guilds** Medium to large streams.

**Statewide** [CrackingPearlymussel.pdf](#)

**Map**

## **CLASS BIVALVIA**

### **Cracking Pearlymussel**

*Hemistena lata*

### **Conservation Issues**

#### Aquatic habitat degradation

- 2C Construction/Operation of impoundments (migration barrier). NatureServe 2004
- 2F Riparian zone removal (Agriculture/development). NatureServe 2004

#### Biological/ consumptive uses

- 5C Biological collection (overharvest). NatureServe 2004

#### Point and non-point source pollution

- 4B Waste water discharge (e.g., sewage treatment). NatureServe 2004
- 4D Oil and gas drilling operations associated runoff. NatureServe 2004

#### Siltation and increased turbidity

- 1A Coal mining. NatureServe 2004
- 1B Agriculture. NatureServe 2004
- 1C Road construction. NatureServe 2004
- 1D Urbanization/Development General Construction. NatureServe 2004

**CLASS BIVALVIA**

**Creek Heelsplitter**

*Lasmigona compressa*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	E	G5	S1	G5	S1

**G-Trend** Decreasing

**G-Trend** Located in several states in the upper midwest, north east and several provinces

**Comment** in Canada (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in Tygart's Creek (Cicerello and Schuster 2003).

**Comment**

**Habitat /** Creeks and small to medium rivers in fine gravel and sand. Very rarely found in

**Life History** large rivers (Cummings and Mayer 1992). Imperiled or vulnerable in approximately 70% of its range (NatureServe 2004).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Found only in Tygart's Creek in northeastern Kentucky (Condition: fully to partially supporting).

**Guilds** Small to medium streams.

**Statewide** [CreekHeelsplitter.pdf](#)

**Map**

## **Conservation Issues**

### Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching

### Point and non-point source pollution

- 4C Toxic chemical spills
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4G Chemical spills and contaminants (applied and accidental)

### Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Cumberland Bean**

*Villosa trabalis*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE,XN	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** The range of *V. trabalis* is difficult to determine due to confusion in literature

**Comment** with the related species, *V. perpurpurea*. The type locality is listed as streams of Tennessee; Clinch River, Virginia (Simpson 1914). The historic range of the species includes the Clinch River, Scott county, Virginia; Hiwassee River, Polk County, Tennessee; South Chickamauga Creek, Catoosa County, Georgia; the Paint Rock River, Jackson County, the Flint River, Madison County, and the Tennessee River at Muscle Shoals, Lauderdale County, all in Alabama. In the upper Cumberland River drainage it is known from the Cumberland River from Pulaski County to Cumberland Falls, Whitley County, Kentucky. It is known from Rockcastle River and its tributary Laurel Fork, Jackson, Rockcastle, and Laurel Counties, Kentucky; also Little South Fork of the Cumberland River, Wayne County, Kentucky and the lower Obey River, Clay County, Tennessee (Bogan and Parmalee 1983). Its current range includes the Hiwassee River, Polk County, Tennessee and North Carolina; the lower Obey River, Clay County, Tennessee; Rockcastle River and its tributary Laurel Fork in Jackson, Rockcastle, and Laurel Counties and the Little South Fork of the Cumberland

River, Wayne County, all in Kentucky (Bogan and Parmalee 1983). It has been extirpated from Virginia, Alabama, and the mainstem of the Cumberland River in Kentucky (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in the Upper Cumberland River system below Cumberland Falls

**Comment** (Cicerello and Schuster 2003).

**Habitat /** Found in sand, gravel, and cobble substrates in waters with moderate to swift

**Life History** currents and depths less than 1 meter (Gordon and Layzer 1989). Extirpated or

Imperiled in all of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Found in the Upper Cumberland River and its tributaries (Condition: fully to partially supporting).

**Guilds** Upland streams in riffles.

## **CLASS BIVALVIA**

**Cumberland Bean**

*Villosa trabalis*

**Statewide** [CumberlandBean.pdf](#)

**Map**

### **Conservation Issues**

Aquatic habitat degradation

2F Riparian zone removal (Agriculture/development)

Biological/ consumptive uses

5G Low population densities of hosts (mussels only)

5H Isolated populations (low gene flow)

Point and non-point source pollution

4A Acid mine drainage other coal mining impacts

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

1A Coal mining

1B Agriculture

1C Road construction

1D Urbanization/Development General Construction

1F Recreational activities (atv, horseback riding)

**CLASS BIVALVIA**

**Cumberland Elktoe**

*Alasmidonta atropurpurea*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	E	G1G2	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Historically, it was known only from the Cumberland Plateau province of the

**Comment** upper Cumberland River basin. The few records available indicate that it inhabited the Cumberland River and only tributaries flowing from the south upstream from the hypothesized original location of Cumberland Falls near Burnside, Pulaski County, Kentucky. It presently (post 1985 records) persists in eight tributaries to the Upper Cumberland River in Kentucky and Tennessee (U.S. Fish and Wildlife Service 1998). It is extirpated from the mainstem of the Cumberland River, Laurel River and its tributary, Lynn Camp Creek in Kentucky. Formerly from 19 localities (U.S. Fish and Wildlife Service 2003) and currently persisting in 12 Cumberland River tributaries (U.S. Fish and Wildlife Service 2003, NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic. Endemic to the Cumberland River both above and below Cumberland

**Comment** Falls. (Cicerello and Schuster 2003)

**Habitat /** The habitat ranges from small creeks to medium-sized rivers. The mussel is

**Life History** most common in smaller stream habitats. Preferred habitat appears to be shallow flats or pools with slow current and sand substrate with scattered cobble/boulder material, although it will occur in mud or rocky substrates and faster currents (Gordon and Layzer 1989). Inhabits medium-sized rivers and may extend into headwater streams where it is often the only mussel present. Appears to be most abundant in flats, or shallow pool areas lacking the bottom contour development of typical pools, with sand and scattered cobble-boulder material, relatively shallow depths, and slow currents (U.S. Fish and Wildlife Service 1997, U.S. Fish and Wildlife Service 2003).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Sporadically found at sites in the Upper Cumberland River and its tributaries (Condition is partially supporting).

**Guilds** Upland streams in riffles.

**Statewide** [CumberlandElktoe.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Cumberland Elktoe**

*Alasmidonta atropurpurea*

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation). U.S. Fish and Wildlife Service 2003
- 2C Construction/Operation of impoundments (migration barrier). U.S. Fish and Wildlife Service 2003
- 2E Stream channelization/ditching. U.S. Fish and Wildlife Service 2003

Biological/ consumptive uses

- 5D Competition from introduced/invasive or native species. U.S. Fish and Wildlife Service 2003

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts . U.S. Fish and Wildlife Service 2003
- 4C Toxic chemical spills. U.S. Fish and Wildlife Service 2003
- 4G Chemical spills and contaminants (applied and accidental). U.S. Fish and Wildlife Service 2003

Siltation and increased turbidity

- 1A Coal mining. U.S. Fish and Wildlife Service 2003
- 1B Agriculture. U.S. Fish and Wildlife Service 2003

1C Road construction. U.S. Fish and Wildlife Service 2003

1D Urbanization/Development General Construction. U.S. Fish and Wildlife  
Service 2003

**CLASS BIVALVIA**

**Cumberland Moccasinshell**

*Medionidus conradicus*

<b>Federal</b>	<b>Heritage</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank</b>	<b>SRank</b>
<b>Status</b>	<b>Status</b>			<b>(Simplified)</b>	<b>(Simplified)</b>
N	N	G3G4	S4	G3	S4

**G-Trend** Decreasing

**G-Trend** Known from the Tennessee and Cumberland river drainages (Burch 1975). May

**Comment** also occur in the Conasauga River along with *M. acutissimus* and *M. parvulus* (D. Stansbery, pers. comm. 9/27/97, OSU museum curator), but this needs to be sorted out with genetic analysis.

**S-Trend** Decreasing

**S-Trend** Occasional to sporadic in the lower and upper Cumberland River system below

**Comment** Cumberland Falls, with secure populations.

**Habitat /** Inhabits small streams in sand and gravel substrates; often found in cracks or

**Life History** under rocks. Vulnerable, imperiled, or extirpated in 67% of it's range.

(NatureServe 2004). Habitat condition is partially supporting.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Small streams to mid-size rivers with sand and gravel substrate in the Upper Cumberland River system (Cicerello and Schuster 2003; Condition: partially supporting).

**Guilds** Upland streams in riffles.

**Statewide** [CumberlandMoccasinshell.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Cumberland Moccasinshell**

*Medionidus conradicus*

### **Conservation Issues**

Aquatic habitat degradation

2B Gravel/sand removal or quarrying (e.g., mineral excavation)

Point and non-point source pollution

4A Acid mine drainage other coal mining impacts

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

1A Coal mining

1B Agriculture

1C Road construction

1D Urbanization/Development General Construction

1F Recreational activities (atv, horseback riding)

**CLASS BIVALVIA**

**Cumberland Papershell** *Anodontooides denigratus*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Restricted to streams in the Cumberland Plateau within the Cumberland River

**Comment** basin upstream from the original location of Cumberland Falls (NatureServe 2004). 1993 field surveys by Mark Gordon and Ron Cicerello found extant populations in the following counties: McCreary and Whitley Cos. Kentucky; Scott, Sentress and Morgan Cos. Tennessee. Has disappeared from type locality in Campbell Co. Tennessee.

**S-Trend** Decreasing

**S-Trend** Sporadic. Endemic to the upper Cumberland River above and below

**Comment** Cumberland Falls (Cicerello and Schuster 2003).

**Habitat /** Restricted to streams with sandstone bedrock (NatureServe 2004). Critically

**Life History** imperiled throughout its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Small to medium size streams in silt, mud, and sand (Cicerello and Schuster 2003; Condition: partially supporting).

**Guilds** Upland streams in riffles.

Statewide [CumberlandPapershell.pdf](#)

Map

## Conservation Issues

Aquatic habitat degradation

2C Construction/Operation of impoundments (migration barrier)

Point and non-point source pollution

4A Acid mine drainage other coal mining impacts

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

1A Coal mining

**CLASS BIVALVIA**

**Cumberlandian Combshell**

*Epioblasma brevidens*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE,XN	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Historically, distributed throughout the Cumberlandian region of the Tennessee

**Comment** and Cumberland river systems in Alabama, Kentucky, Mississippi, Tennessee, and Virginia (U.S. Fish and Wildlife Service 2003). Populations are currently known from Buck Creek in Kentucky; through a few miles of the Big South Fork Cumberland River in Kentucky and Tennessee; and in very low numbers in the Powell and Clinch rivers in Virginia and Tennessee (U.S. Fish and Wildlife Service 1997). A few, likely non-reproducing populations associated with sub-lotic sections of some reservoirs (e.g., Old Hickory Reservoir on the Cumberland River). In 1997 several fresh dead specimens were found by Jeff Garner in Bear Creek, a tributary of the Tennessee River in northwestern Alabama and according to Tom Mann (Mississippi Natural Heritage Program) fresh dead shells were found in Mississippi in September 2000. Currently restricted to five stream reaches (U.S. Fish and Wildlife Service 2003) (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in the Upper Cumberland River below Cumberland Falls. (Cicerello  
**Comment** and Schuster 2003)

**Habitat /** The habitat ranges from large creeks to large rivers, in substrates ranging from

**Life History** coarse sand to mixtures of gravel, cobble, and boulder-sized particles. The mussel tends to occur at depths of less than one meter, although the relict (and presumably non-reproducing) populations now occur in considerably deeper water (Gordon and Layzer 1989). Inhabits medium-sized streams to large rivers on shoals and riffles in coarse sand, gravel, cobble, and boulders and is not associated with small stream habitats. Occurs in larger tributaries than *Epioblasma capsaeformis* (U.S. Fish and Wildlife Service 2003). Much of its former habitat has been inundated by reservoirs and considerable other portions have been devastated by acid mine run-off (U.S. Fish and Wildlife Service 2003).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Found in small to large rivers with sand and gravel bottoms in the Cumberland River system in south-central Kentucky (Condition: partially supporting).

## **CLASS BIVALVIA**

### **Cumberlandian Combshell**

*Epioblasma brevidens*

**Guilds** Medium to large streams.

**Statewide** [CumberlandianCombshell.pdf](#)

**Map**

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation). U.S. Fish and Wildlife Service 2003
- 2C Construction/Operation of impoundments (migration barrier). U.S. Fish and Wildlife Service 2003
- 2E Stream channelization/ditching. U.S. Fish and Wildlife Service 2003

Biological/ consumptive uses

- 5D Competition from introduced/invasive or native species. U.S. Fish and Wildlife Service 2003
- 5G Low population densities of hosts (mussels only). U.S. Fish and Wildlife Service 2003

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts . U.S. Fish and Wildlife Service 2003
- 4C Toxic chemical spills. U.S. Fish and Wildlife Service 2003

4G Chemical spills and contaminants (applied and accidental). U.S. Fish and  
Wildlife Service 2003

Siltation and increased turbidity

1A Coal mining. U.S. Fish and Wildlife Service 2003

1B Agriculture. U.S. Fish and Wildlife Service 2003

1C Road construction. U.S. Fish and Wildlife Service 2003

1F Recreational activities (atv, horseback riding). U.S. Fish and Wildlife  
Service 2003

**CLASS BIVALVIA**

**Dromedary Pearlymussel**

*Dromus dromas*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE,XN	X	G1	SX	G1	S1

**G-Trend** Decreasing

**G-Trend** Known from the Cumberland and Tennessee river systems in Tennessee and

**Comment** Virginia. Once common throughout the Tennessee River system. Currently known from the middle Cumberland River in Smith County, Tennessee; the Tennessee River in Meigs County, Tennessee; and in the upper Powell and Clinch rivers in Tennessee and Virginia (Parmalee and Bogan 1998). (NatureServe 2004)

**S-Trend** Decreasing

**S-Trend** Extirpated; Formerly in the Tennessee River and lower and upper Cumberland

**Comment** River below Cumberland Falls. (Cicerello and Schuster 2003)

**Habitat /** A riffle dwelling species occurring at shoals with sand and gravel and moderate

**Life History** current velocities, but also found in deeper, slower moving water in Tennessee. Extirpated or critically imperiled in all its range (NatureServe 2004).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Found in medium to large rivers in sand and gravel, but likely extirpated from Kentucky (Cicerello and Schuster 2003; Condition: partially supporting).

**Guilds** Medium to large streams.

**Statewide** [DromedaryPearlymussel.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Dromedary Pearlymussel**

*Dromus dromas*

### **Conservation Issues**

Aquatic habitat degradation

2C Construction/Operation of impoundments (migration barrier)

Point and non-point source pollution

4A Acid mine drainage other coal mining impacts

4B Waste water discharge (e.g., sewage treatment)

4D Oil and gas drilling operations associated runoff

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

1A Coal mining

1B Agriculture

1C Road construction

**CLASS BIVALVIA**

**Elephantear** *Elliptio crassidens*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	N	G5	S4S5	G5	S4

- G-Trend** Decreasing
- G-Trend** Wide-ranging in eastern U.S. with its southeastern terminus in the Escambia and
- Comment** Apalachicola River drainages in the Florida panhandle. (NatureServe 2004)
- S-Trend** Decreasing
- S-Trend** Occasional to sporadic nearly statewide (Cicerello and Schuster 2003) with
- Comment** apparently secure populations (NatureServe 2004). Populations are located in several larger rivers and streams throughout the state.
- Habitat /** Muddy sand, sand and rocky substrates in moderate currents in larger rivers
- Life History** (Heard 1979). Extirpated or imperiled in over 60% of its range (NatureServe 2004).
- Key** Key Habitat Locations (and their condition):
- Habitat** 1. Medium to large rivers in mud, sand and gravel (Cicerello and Schuster 2003; Condition: partially supporting).
- Guilds** Large rivers in current.
- Statewide** [Elephantear.pdf](#)
- Map**

## **CLASS BIVALVIA**

**Elephantear**

*Elliptio crassidens*

### **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching

Biological/ consumptive uses

- 5D Competition from introduced/invasive or native species
- 5J Incidental mortality due to commercial fishing/musseling (mortality and overharvest)

Point and non-point source pollution

- 4K Industrial waste discharge/runoff

Siltation and increased turbidity

- 1B Agriculture
- 1C Road construction
- 1D Urbanization/Development General Construction

**CLASS BIVALVIA**

**Elktoe** *Alasmidonta marginata*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	T	G4	S2	G4	S2

**G-Trend** Decreasing

**G-Trend** Ranges in the north from Ontario, Canada (Great Lakes and St. Lawrence

**Comment** drainage) south to Alabama (Tennessee drainage) and on the east from New York to Virginia (Ohio drainage) and on the west from eastern North Dakota to northeastern Oklahoma (historic records only), with the center of abundance being in Ohio, Indiana and Illinois. Starret (1971) reported that it historically occurred in the upper and middle parts of the Illinois River, but was eliminated by pollution following the opening of the Chicago Sanitary Canal in 1900. Ortmann (1919) also indicated that this species had been extirpated from the Monongahela drainage in Pennsylvania. Today the entire main Cheat River is devoid of unionid bivalves due to acid mine drainage. The Atlantic slope form (var. *Susquehannae*) is found in the Susquehanna basin of Pennsylvania and New York as well as the upper St. Lawrence River, Canada (Ortmann 1919; Johnson 1970; NatureServe 2004)

**S-Trend** Decreasing

**S-Trend** Sporadic in the Eastern half of Kentucky (Cicerello and Schuster 2003), with

**Comment** individuals occurring in the Upper Green River.

**Habitat /** Although it occurs in large to medium sized streams, it is more typical of

**Life History** smaller streams (Buchanan 1980; Goodrich and Van Der Schalie 1944; Oesch 1995; Parmalee 1967; Wilson and Clark 1914). Ortmann (1919) described it as a riffle species that is found in swift current in firmly packed fine to course gravel. Parmalee (1967) reported the preferred habitat to be small streams with good current and sand or gravel bottoms at depths of several inches to two feet. Buchanan (1980) found it to be common in gravel and cobble substrate in two to 18 inches of water, Neel and Allen (1964) found it to be more abundant in the mainstream Cumberland River than in small streams. Vulnerable, imperiled, or extirpated in 55% of its range (NatureServe 2004). Habitat condition is partially supporting

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Small streams to medium size rivers in gravel and sand in eastern Kentucky (Cicerello and Schuster 2003; Condition: partially supporting).

**Guilds** Medium to large streams.

## **CLASS BIVALVIA**

**Elktoe**

*Alasmidonta marginata*

**Statewide** [Elktoe.pdf](#)

**Map**

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation). NatureServe 2004
- 2C Construction/Operation of impoundments (migration barrier). NatureServe 2004
- 2F Riparian zone removal (Agriculture/development). NatureServe 2004
- 2J Alteration of surface runoff patterns ( flow/temp regimes). NatureServe

Biological/ consumptive uses

- 5G Low population densities of hosts (mussels only). NatureServe 2004

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts . NatureServe 2004
- 4D Oil and gas drilling operations associated runoff. NatureServe 2004
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. NatureServe 2004
- 4F Urban runoff. NatureServe 2004

Siltation and increased turbidity

1A Coal mining. NatureServe 2004

1B Agriculture. NatureServe 2004

**CLASS BIVALVIA**

**Fanshell** *Cyprogenia stegaria*

<b>Federal</b>	<b>Heritage</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank</b>	<b>SRank</b>
<b>Status</b>	<b>Status</b>			<b>(Simplified)</b>	<b>(Simplified)</b>
LE	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Historically, it was widely distributed in the Tennessee, Cumberland, and Ohio

**Comment** River systems, although it has become very rare in recent years. In the Ohio drainage it has been recently found in: the deep channel of the Ohio River between Cincinnati and Pittsburgh (Johnson 1980); the lower Muskingum and Walhonding Rivers, Ohio (Stansbery et al. 1982); the Salt and Licking Rivers, tributaries of the Ohio; the Green River, Kentucky (Biggins 1991) the Kanawha River, West Virginia (Stansbery, pers. comm.); the Allegheny River, Pennsylvania (Dennis 1970); and the lower Clinch River in Scott County (Neves 1991, Smith 1971, NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Generally distributed in the Licking, Rolling Fork (Salt River) and Upper Green

**Comment** Rivers, sporadic elsewhere (Cicerello and Schuster 2003).

**Habitat /** Characteristic habitat is medium to large streams (Dennis 1984). It has been

**Life History** found in river habitats with gravel substrates and a strong current, in both deep and shallow water (Ortmann 1919; Parmalee 1967).

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Lower to Middle Licking River
  2. Rolling Fork of Salt River
  3. Upper Green River.

Habitat conditions are partially supporting in each.

**Guilds** Medium to large streams.

**Statewide** [Fanshell.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Fanshell**

*Cyprogenia stegaria*

### **Conservation Issues**

Aquatic habitat degradation

2C Construction/Operation of impoundments (migration barrier)

2J Alteration of surface runoff patterns ( flow/temp regimes)

Biological/ consumptive uses

5D Competition from introduced/invasive or native species

Point and non-point source pollution

4B Waste water discharge (e.g., sewage treatment)

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

4K Industrial waste discharge/runoff

Siltation and increased turbidity

1B Agriculture

**CLASS BIVALVIA**

**Fat Pocketbook**

*Potamilus capax*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Formerly present in Minnesota, Wisconsin, Iowa, Illinois, Indiana, Missouri,

**Comment** Kentucky, and Arkansas. Prior to 1970, most records appear to be from three areas, the upper Mississippi River above St. Louis, Missouri, the Wabash River in Indiana, and the St. Francis River in Arkansas (Dennis 1985). Since 1970, the species has been found extant in portions of the St. Francis River (Jenkinson and Ahlstedt 1995), with scattered records from the Wabash and Ohio Rivers in Indiana and Kentucky (Sickel 1987; Cummings et al. 1990; Cummings and Mayer 1993) and in southeastern Missouri (NatureServe 2004). The largest population of *P. capax* occurs in the St. Francis Floodway.

**S-Trend** Decreasing

**S-Trend** Sporadic in the Mississippi, lower Ohio, and extreme lower Cumberland River

**Comment** systems (Cicerello and Schuster 2003).

**Habitat /** Found in sand, mud, and fine gravel substrates and flowing water (Dennis

**Life History** 1985). Found in large rivers in slow-flowing water (often near the bank) in mud or sand (Cummings et al. 1990) (NatureServe 2004). This species is critically

imperiled throughout all of its range. Habitat is partially supporting.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Mississippi River proper near island at Columbus in Hickman County  
(Condition: partially supporting).

**Guilds** Large rivers in slackwater.

**Statewide** [FatPocketbook.pdf](#)

**Map**

## **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging. NatureServe 2004
- 2C Construction/Operation of impoundments (migration barrier). NatureServe  
2004
- 2E Stream channelization/ditching. NatureServe 2004

**CLASS BIVALVIA**

**Fluted Kidneyshell**

*Ptychobranthus subtentum*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
C	E	G2G3	S1	G2	S1

**G-Trend** Decreasing

**G-Trend** Historically known from approximately 16 tributaries of the Cumberland River

**Comment** and 21 tributaries of the Tennessee River. Currently known from nine streams (six isolated populations) in the Cumberland River system and seven streams (four isolated populations) in the Tennessee River system, and is absent from the mainstems of both rivers (NatureServe 2004). At least one population (Clinch River) is considered viable (NatureServe 2004). The U.S. Fish and Wildlife Service in 1999 estimated that it had been eliminated from approximately three-fifths of the total number of streams where it historically occurred. It is currently at risk of becoming extirpated from the entire Cumberland River system and is already extirpated from mainstem sites (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Restricted to the upper Cumberland river system below Cumberland Falls in

**Comment** Kentucky (Cicerello and Schuster 2003).

**Habitat /** Inhabits small to medium rivers in areas with swift current or riffles, although a

**Life History** few populations were recorded from larger rivers in shoal areas. It is often found embedded in sand, gravel, and cobble substrates (Gordon and Layzer 1989). Requires flowing, well-oxygenated waters.

**Key** Key Habitat Locations (and their condition):

**Habitat** Limited to the upper Cumberland River below Cumberland Falls, including:

1. Buck Creek
2. Big South Fork of the Cumberland River
3. Horse Lick Creek.

Condition is generally 60-90% fully supporting in areas where it can be found.

**Guilds** Medium to large streams.

**Statewide** [FlutedKidneyshell.pdf](#)

**Map**

## **CLASS BIVALVIA**

### **Fluted Kidneyshell**

*Ptychobranthus subtentum*

### **Conservation Issues**

#### Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation). U.S. Fish and Wildlife Service 1999
- 2C Construction/Operation of impoundments (migration barrier). U.S. Fish and Wildlife Service 1999

#### Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts . U.S. Fish and Wildlife Service 1999
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. U.S. Fish and Wildlife Service 1999

#### Siltation and increased turbidity

- 1A Coal mining. U.S. Fish and Wildlife Service 1999
- 1B Agriculture. U.S. Fish and Wildlife Service 1999
- 1F Recreational activities (atv, horseback riding). U.S. Fish and Wildlife Service 1999

**CLASS BIVALVIA**

**Green Floater**

*Lasmigona subviridis*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	X	G3	SX	G3	S1

**G-Trend** Decreasing

**G-Trend** New and Greenbriar rivers (West Virginia and Virginia), Upper Savannah River

**Comment** system (South Carolina), and north to the Hudson River system, and westward through the Mohawk River and the Erie Canal to the Genesee River of New York (Parmalee and Bogan 1998).

**S-Trend** Decreasing

**S-Trend** Possibly extirpated. Known only from Tygarts Creek.

**Comment**

**Habitat /** Small to medium-sized rivers in sand and gravel (Cicerello and Schuster 2003).

**Life History** Habitat likely still common, but microhabitat factors such as reduced transport of silt and pollutants away from the microhabitat may be causing decline. It is imperiled throughout all of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Tygart's Creek (Condition: over 74% fully supporting).

**Guilds** Upland streams in pools.

**Statewide** [GreenFloater.pdf](#)

## **Map**

### **Conservation Issues**

Aquatic habitat degradation

2F Riparian zone removal (Agriculture/development)

2G Water level fluctuations

Point and non-point source pollution

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

1B Agriculture

1C Road construction

1D Urbanization/Development General Construction

**CLASS BIVALVIA**

**Kentucky Creekshell**

*Villosa ortmanni*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	T	G2	S2	G2	S2

**G-Trend** Decreasing

**G-Trend** Endemic to the Green River system in Kentucky where it inhabits a few sites in

**Comment** the Green River and in a direct tributary, as well as a limited number of tributaries of the Nolin, Rough, and Barren rivers (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Endemic to the Green River system (Cicerello and Schuster 2003). Endemic to

**Comment** one river system with less than 20 extant populations; suitable habitat is fragmented (NatureServe 2004).

**Habitat /** Small streams to medium-sized rivers in sand, mud, and gravel (Cicerello and

**Life History** Schuster 2003).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Small streams in Logan and Warren Counties (tributaries to the Barren River)

2. Nolin River in Hardin County

Habitat is 79-92% fully supporting.

**Guilds** Medium to large streams.

**Statewide** [KentuckyCreekshell.pdf](#)

**Map**

## **Conservation Issues**

Aquatic habitat degradation

2B Gravel/sand removal or quarrying (e.g., mineral excavation)

2E Stream channelization/ditching

Point and non-point source pollution

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

**CLASS BIVALVIA**

**Little Spectaclecase** *Villosa lienosa*

<b>Federal</b>	<b>Heritage</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank</b>	<b>SRank</b>
<b>Status</b>	<b>Status</b>			<b>(Simplified)</b>	<b>(Simplified)</b>
N	S	G5	S3S4	G5	S3

**G-Trend** Decreasing

**G-Trend** Although widespread, uncommon in the Ohio River drainage, including Illinois,

**Comment** Indiana, and Ohio (Cummings and Mayer 1992). Stansbery (1969) reports that the species is "increasing" within the Cumberland River, Kentucky in his observations compared with those of 1911 and 1947-1949. Note: This report may be bias based on the sampling methods used, increasing the visibility of the species. Furthermore, it is still one of the under collected species at his 1961 study site (NatureServe 2004). Vulnerable to critically imperiled in over half of its range (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic nearly statewide (Cicerello and Schuster 2003).

**Comment**

**Habitat /** In sandy substrates in slight to moderate current (Heard 1979). Prefers mud,

**Life History** particularly when rich in vegetable detritus (Clench and Turner 1956).

Typically inhabits small creeks to medium-sized rivers, usually along the banks in slower currents. Characteristic more so of smaller streams than not, and may

be the only species present (or with *Elliptio* sp.) in headwater streams of the western panhandle (NatureServe 2004).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Upper Rough River upstream of Rough River lake (Condition: fully supporting).

**Guilds** Upland streams in pools.

**Statewide** [LittleSpectaclecase.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Little Spectaclecase**

*Villosa lienosa*

### **Conservation Issues**

Aquatic habitat degradation

2E Stream channelization/ditching

Point and non-point source pollution

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

1B Agriculture

**CLASS BIVALVIA**

**Littlewing Pearlymussel**

*Pegias fabula*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
LE	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** 1986 surveys found it six short stream reaches of the Tennessee and

**Comment** Cumberland River basins. Over 55 potential or historic habitat areas were searched. It now believed to exist in only three sites in southeastern Kentucky, two sites in southeastern Virginia, and one site in central Tennessee (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** It now believed to exist in only three sites in southeastern Kentucky

**Comment** NatureServe 2004).

**Habitat /** Common at the head of riffles, but also found in and below riffles on sand and

**Life History** gravel substrates with scattered cobbles. Also inhabits sand pockets between rocks, cobbles and boulders, and underneath large rocks (Gordon and Layzer 1989). It is restricted to small, cool streams. It is usually found lying on top or partially buried in sand and fine gravel between cobble in only 6 to 10 inches of water. It is usually found at the head of riffles (Bogan and Parmalee 1983; Stansbery 1976). Condition is partially to fully supporting. This species is

critically imperiled throughout all of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Big South Fork Cumberland River in McCreary County (five mile section from Tennessee to Bear Creek; Condition: fully supporting)  
2. Horse Lick Creek (Condition: fully supporting).

**Guilds** Upland streams in riffles.

**Statewide** [LittlewingPearlymussel.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Littlewing Pearlymussel**

*Pegias fabula*

### **Conservation Issues**

Aquatic habitat degradation

2C Construction/Operation of impoundments (migration barrier)

2E Stream channelization/ditching

Biological/ consumptive uses

5C Biological collection (overharvest)

5G Low population densities of hosts (mussels only)

Point and non-point source pollution

4A Acid mine drainage other coal mining impacts

4B Waste water discharge (e.g., sewage treatment)

4C Toxic chemical spills

4D Oil and gas drilling operations associated runoff

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

4F Urban runoff

Siltation and increased turbidity

1A Coal mining

1B Agriculture

1C Road construction

1E Silviculture

1F Recreational activities (atv, horseback riding)

**CLASS BIVALVIA**

**Longsolid** *Fusconaia subrotunda*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	S	G3T3	S3	G3	S3

**G-Trend** Decreasing

**G-Trend** Historically distributed in the Ohio, Cumberland and Tennessee river drainages.

**Comment** Status largely unknown throughout its range. Thought to be extirpated from Illinois, very rare in Indiana, and North Carolina. Once thought to be nearly extirpated from Kentucky (Schuster 1988) but "sporadic in the lower Green River and eastward (Cicerello and Schuster 2003) so special concern there. Endangered in Ohio where the only remaining population is thought to exist in the Muskingum River.

Vulnerable to critically imperiled in over 90% of its range.

**S-Trend** Decreasing

**S-Trend** Sporadic in the Green River and eastward (Cicerello and Schuster 2003).

**Comment**

**Habitat /** Found in medium to large rivers in gravel with a strong current (Watters 1995).

**Life History**

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Green River in the Munfordville Area (Condition: fully supporting).

**Guilds** Medium to large streams.

**Statewide** [Longsolid.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Longsolid**

*Fusconaia subrotunda*

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)

Biological/ consumptive uses

- 5G Low population densities of hosts (mussels only)

Point and non-point source pollution

- 4C Toxic chemical spills
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4H Confined animal operations

Siltation and increased turbidity

- 1A Coal mining

**CLASS BIVALVIA**

**Mountain Creekshell**

*Villosa vanuxemensis vanuxemensis*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	T	G4	S2	G4	S2

**G-Trend** Decreasing

**G-Trend** Restricted to the Tennessee and Cumberland River basins and the Upper Coosa

**Comment** River system (Conasauga River, northern Georgia) (Parmalee and Bogan 1998).

**S-Trend** Decreasing

**S-Trend** Sporadic in the lower Cumberland River (Red River) (Cicerello and Schuster

**Comment** 2003).

**Habitat /** Small streams and small rivers in silt, sand, or gravel (Cicerello and Schuster

**Life History** 2003). Habitat partially supporting.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Red River in Logan County, Kentucky (Condition: fully supporting).

**Guilds** Lowland Streams in riffles.

**Statewide** [MountainCreekshell.pdf](#)

**Map**

**Conservation Issues**

Aquatic habitat degradation

2B Gravel/sand removal or quarrying (e.g., mineral excavation)

2C Construction/Operation of impoundments (migration barrier)

Point and non-point source pollution

4B Waste water discharge (e.g., sewage treatment)

4C Toxic chemical spills

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

1B Agriculture

1C Road construction

1D Urbanization/Development General Construction

**CLASS BIVALVIA**

**Northern Riffleshell**

*Epioblasma torulosa rangiana*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	E	G2T2	S1	G2	S1

**G-Trend** Decreasing

**G-Trend** Historically occurred throughout much of the Ohio River watershed but range

**Comment** has been dramatically reduced to eight to ten populations scattered over four states and one province with only three that are considered viable (NatureServe 2004). Has experienced greater than a 95% range reduction (U.S. Fish and Wildlife Service 1993; Staton et al. 2000)). The northern riffleshell was listed as a federally endangered species in February of 1993. It was also considered to be Endangered by the freshwater mussel subcommittee of the endangered species committee of the American Fisheries Society (Williams et al. 1993). In the Midwest, the northern riffleshell was widely distributed and relatively common in some of the headwater streams in the Wabash and Ohio river drainages. Endangered in Indiana, Michigan, and Ohio. Extirpated from Illinois. See Staton et al. (2000) for trend information. Global Inventory Needs: Historical records exist from the Mahoning and Little Mahoning rivers in Ohio and Pennsylvania and may still harbor populations and should be investigated. Additional work needs to be done on the Tippecanoe River in Indiana, the Elk River in West Virginia, and the Green River in Kentucky where fresh-dead shells have been

found in recent years (Watters 1994). An inventory of existing museum records should be compiled to provide information on historical sites and potential new ones.

**S-Trend** Decreasing

**S-Trend** Possibly extirpated. Formerly in the Ohio and Green River to the Licking River.

**Comment**

**Habitat /** Small to large rivers in sand and gravel (Cicerello and Schuster 2003). Ortmann

**Life History** (1919:334) reported that this species was "always found...on riffles, on a bottom of firmly packed and rather fine gravel, in swiftly flowing, shallow water or coarse gravel" and Clarke (1981) gave its habitat as "highly oxygenated riffle". Preferred habitat appears to require swiftly moving water. Lowered dissolved oxygen content and elevated ammonia levels (frequently associated with agricultural runoff and sewage discharge) have been shown to be lethal to some species of freshwater naiads (Horne and McIntosh 1979). Dredging of streams has an immediate effect on existing populations by physically removing and destroying individuals.

## **CLASS BIVALVIA**

### **Northern Riffleshell**

*Epioblasma torulosa rangiana*

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Possibly extirpated. Green River in Hart County (Condition: fully supporting (80%) in the Green River).

**Guilds** Medium to large streams.

**Statewide** [NorthernRiffleshell.pdf](#)

### **Map**

## **Conservation Issues**

### Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)

### Biological/ consumptive uses

- 5D Competition from introduced/invasive or native species
- 5J Incidental mortality due to commercial fishing/musseling (mortality and overharvest)

### Point and non-point source pollution

- 4B Waste water discharge (e.g., sewage treatment)
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4K Industrial waste discharge/runoff

Siltation and increased turbidity

1B Agriculture

1C Road construction

1D Urbanization/Development General Construction

**CLASS BIVALVIA**

**Orangefoot Pimpleback**

*Plethobasus cooperianus*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** The historical range included the Ohio River from western Pennsylvania to

**Comment** southern Indiana, the Wabash River below Mt. Carmel, Illinois, the Cumberland River from Cumberland County, Kentucky to the vicinity of Nashville, Tennessee, the lower Clinch River in Anderson County, Tennessee, and the Tennessee River from near Knoxville to Kentucky Lake, Benton County, Tennessee. It has also been reported from the Caney Fork, Holston, and French Broad rivers in Tennessee and the Green and Rough rivers in Kentucky. At present it is thought to be restricted to the lower Ohio River, middle reaches of the Cumberland River, and the lower Tennessee River in northern Alabama and western Tennessee (Ahlstedt 1984; Miller et al. 1986). The largest population probably exists in a short reach of the Tennessee River mainstem below Pickwick Dam, near river mile 207 (Ahlstedt 1984). Presently restricted to the Tennessee, Cumberland, and lower Ohio rivers where it is rare. Between 1979 and 1982 a large number of fresh-dead shells were collected from a shell buyers cookout camp below Pickwick Dam. Juveniles also found in muskrat middens along the Tennessee River in Hardin County, Tennessee (Ahlstedt 1984).

Individuals are rare but regularly reported from the lower Ohio River near Metropolis, Illinois (Cummings and Mayer 1995). Parmalee et al. (1980) reported finding live individuals near Bartlett's Bar on the Cumberland River in 1979 and represent the only live records in the river since Neel and Allen (1964) (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in the Ohio River and the Tennessee River in western Kentucky

**Comment** (Cicerello and Schuster 2003).

**Habitat /** Found in large rivers in sand, gravel, and cobble substrates in riffles and shoals

**Life History** in deep water and steady currents (Gordon and Layzer 1989; Bogan and Parmalee 1983; Cummings and Mayer 1992).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Lower Tennessee River below Kentucky Dam to the Lower Ohio River and to the confluence with the Mississippi River (Condition: only 50% of its habitat fully supporting).

**Guilds** Large rivers in current.

## **CLASS BIVALVIA**

### **Orangefoot Pimpleback**

*Plethobasus cooperianus*

**Statewide** [OrangefootPimpleback.pdf](#)

**Map**

### **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2J Alteration of surface runoff patterns ( flow/temp regimes)

Biological/ consumptive uses

- 5D Competition from introduced/invasive or native species
- 5J Incidental mortality due to commercial fishing/musseling (mortality and overharvest)

Point and non-point source pollution

- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4K Industrial waste discharge/runoff

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Oyster Mussel**

*Epioblasma capsaeformis*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE,XN	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Was once a commonly found species (1970's), but abundance has dropped and

**Comment** it has been extirpated from many former sites including the mainstems of the Cumberland and Tennessee Rivers now only extant in a handful of streams in four states in the Tennessee and Cumberland River systems (U.S. Fish and Wildlife Service 1998; U.S. Fish and Wildlife Service 2003). Post 1985 records are in nine tributaries, some of these occurrences (Clinch and Duck rivers and the Big South Fork River) are relatively healthy (U.S. Fish and Wildlife Service 1998). Populations remain in isolated stretches of the Big South Fork (Scott County, Tennessee, and McCreary County, Kentucky) although the identity of these populations may be in question (U.S. Fish and Wildlife Service 2003). Populations are also extant in the Tennessee River system in the Clinch River (Russell and Scott Counties, Virginia and Hancock County, Tennessee), Powell River (Lee County, Virginia), North Fork Holston River (Scott County, Virginia- reintroduced), Nolichucky River (Cocke and Hamblen Counties, Tennessee), and Duck River (Marshall County, Tennessee); while it may still be extant in Copper Creek (U.S. Fish and Wildlife Service 2003) (NatureServe

2004). Occurs in very low numbers within the jurisdiction of the US Park Service in the Big South Fork National River and Recreation Area. Also has been found in the vicinity of The Nature Conservancy's Pendleton Island Preserve, but only dead shells have been reported from the preserve. Survival of populations in such "protected" areas is largely dependent on the continuation of high environmental quality in the watershed upstream from such sites. Such conditions do not exist at either site.

**S-Trend** Decreasing

**S-Trend** Sporadic in the upper Cumberland River below Cumberland Falls (Cicerello and

**Comment** Schuster 2003).

**Habitat /** Inhabits moderate to swift currents in large creeks and rivers in substrates

**Life History** composed of coarse sand and gravel to boulder-sized particles, rarely mud. It may be associated with beds of water willow bordering the main channel of the riffle (Ortmann 1924; Gordon and Layzer 1989). Inhabits small to medium-sized rivers, and sometimes large rivers, in areas with coarse sand to boulder substrate (rarely in mud) and moderate to swift currents. It is sometimes associated with water-willow beds and in pockets of gravel between bedrock

## **CLASS BIVALVIA**

### **Oyster Mussel**

*Epioblasma capsaeformis*

ledges in areas of swift current (U.S. Fish and Wildlife Service 2003)  
(NatureServe 2004).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Possibly extirpated. Big South Fork of the Cumberland River near the  
Tennessee border (Condition: fully supporting at 67-90%).

**Guilds** Medium to large streams.

**Statewide** [OysterMussel.pdf](#)

**Map**

## **CLASS BIVALVIA**

### **Oyster Mussel**

*Epioblasma capsaeformis*

### **Conservation Issues**

#### Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation). U.S. Fish and Wildlife Service 2003
- 2C Construction/Operation of impoundments (migration barrier). U.S. Fish and Wildlife Service 2003
- 2E Stream channelization/ditching. U.S. Fish and Wildlife Service 2003
- 2F Riparian zone removal (Agriculture/development). U.S. Fish and Wildlife Service 2003
- 2G Water level fluctuations. U.S. Fish and Wildlife Service 2003

#### Biological/ consumptive uses

- 5D Competition from introduced/invasive or native species. U.S. Fish and Wildlife Service 2003
- 5G Low population densities of hosts (mussels only). U.S. Fish and Wildlife Service 2003

#### Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts . U.S. Fish and Wildlife Service 2003
- 4B Waste water discharge (e.g., sewage treatment). U.S. Fish and Wildlife Service 2003

- 4C Toxic chemical spills. U.S. Fish and Wildlife Service 2003
- 4D Oil and gas drilling operations associated runoff. U.S. Fish and Wildlife Service 2003
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. U.S. Fish and Wildlife Service 2003
- 4F Urban runoff. U.S. Fish and Wildlife Service 2003
- 4G Chemical spills and contaminants (applied and accidental). U.S. Fish and Wildlife Service 2003

Siltation and increased turbidity

- 1A Coal mining. U.S. Fish and Wildlife Service 2003
- 1B Agriculture. U.S. Fish and Wildlife Service 2003
- 1C Road construction. U.S. Fish and Wildlife Service 2003
- 1D Urbanization/Development General Construction. U.S. Fish and Wildlife Service 2003
- 1E Silviculture. U.S. Fish and Wildlife Service 2003
- 1F Recreational activities (atv, horseback riding). U.S. Fish and Wildlife Service 2003

**CLASS BIVALVIA**

**Pink Mucket**

*Lampsilis abrupta*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
LE	E	G2	S1	G2	S1

**G-Trend** Decreasing

**G-Trend** Considered as an Interior Basin species in origin. Formerly scattered throughout

**Comment** the Mississippi, Tennessee, Ohio and Cumberland river systems. Now extirpated in Ohio (Watters 1993), Pennsylvania (Bogan 1993), and Illinois (Matthews and Moseley 1990). Historically known from 25 rivers and tributaries. In 1990 known from 16 rivers and tributaries (Matthews and Moseley 1990). This species has never been collected in large numbers from any one site or drainage (U.S. Fish and Wildlife Service 1985). Most surveys only find one to five individuals. Low populations found in three major drainages in Missouri (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in the lower Ohio River to the Licking River (Cicerello and Schuster

**Comment** 2003). Generally rare to very rare at any site, often only one individual can be found with intense sampling effort.

**Habitat /** Medium-sized to large rivers in sand and gravel (NatureServe 2004).

**Life History**

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Lower Green River below lock and dam 5 at Glenmore
  2. Lower Barren River below Lock and Dam 1
  3. Lower Ohio River from the Tennessee River (Kentucky Dam) to the Mississippi River.

Habitat fully supporting the Green (90%), but only 50% in the Ohio.

**Guilds** Large rivers in current.

**Statewide** [PinkMucket.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Pink Mucket**

*Lampsilis abrupta*

### **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)

Biological/ consumptive uses

- 5J Incidental mortality due to commercial fishing/musseling (mortality and overharvest)

Point and non-point source pollution

- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4K Industrial waste discharge/runoff

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Pocketbook** *Lampsilis ovata*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	E	G5	S1	G5	S1

**G-Trend** Decreasing

**G-Trend** Interior Basin: Mississippi and Ohio drainages. St. Lawrence drainage from

**Comment** Lake Superior to the Ottawa River and Lake Champlain. Also found in the Hudson Bay drainage, Northern Atlantic Slope (Potomac River), where it was introduced. Taxonomic problems include confusion with *Lampsilis ovata ovata*, *L. ovata ventricosa* (=L. *cardium*), and *L. satura* (Parmalee and Bogan 1998). It is considered imperiled in over half of its range in the U.S..

**S-Trend** Decreasing

**S-Trend** Sporadic in the lower Ohio River to the Upper Green. Taxonomic problems

**Comment** include confusion with *Lampsilis ovata ventricosa* (=L. *cardium*).

**Habitat /** Medium-sized to large rivers in sand and gravel (Cicerello and Schuster 2003).

**Life History**

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Middle and Upper Green River
  2. lower Tennessee River below Kentucky Dam

Habitat fully supporting for both.

**Guilds** Medium to large streams.

**Statewide** [Pocketbook.pdf](#)

**Map**

# **CLASS BIVALVIA**

**Pocketbook**

*Lampsilis ovata*

## **Conservation Issues**

Aquatic habitat degradation

- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching
- 2F Riparian zone removal (Agriculture/development)
- 2G Water level fluctuations

Biological/ consumptive uses

- 5G Low population densities of hosts (mussels only)

Point and non-point source pollution

- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Purple Lilliput**

*Toxolasma lividus*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	E	G2	S1	G2	S1

**G-Trend** Decreasing

**G-Trend** Because of the uncertainty of the distinctness of lividus vs. glans, it is not clear

**Comment** just what the current distribution of lividus encompasses. Both forms have suffered considerable declines in range. In the Cumberland River basin, it is known to occur sporadically in less than ten tributary streams (e.g., Little South Fork Cumberland River, Buck Creek: see Schuster et al. 1989). In the Tennessee River basin, it occurs in small, disjunct populations in the Duck, Elk, Paint Rock, and North Fork Holston rivers. The glans form is more widely distributed, although still sporadic and in greatly reduced numbers: Kentucky, Ohio, Indiana, Illinois, Michigan, Ozark Plateaus in southern Missouri, northern Arkansas, and northern Oklahoma. Recent collections of a similar Toxalasma from the Ouachita mountains in Arkansas may represent a different species. It is considered imperiled in all of its range.

**S-Trend** Decreasing

**S-Trend** Sporadic in the Green River and in the upper Cumberland River below

**Comment** Cumberland Falls (Cicerello and Schuster 2003).

**Habitat /** Inhabits fine-particle substrates and also sand, gravel, or cobbles and boulders in

**Life History** riffles or flats immediately above riffles (Gordon and Layzer 1989). It is often the first species encountered in headwater areas. It generally occurs at depths < 1 m. It very rarely is encountered in a big river habitat or reservoirs (Gordon and Layzer 1989).

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Upper Buck Creek
  2. Horse Lick Creek near Raccoon Creek
  3. Green River

Habitat fully supporting (60-90%) for all.

**Guilds** Upland streams in riffles.

**Statewide** [PurpleLilliput.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Purple Lilliput**

*Toxolasma lividus*

### **Conservation Issues**

Aquatic habitat degradation

2B Gravel/sand removal or quarrying (e.g., mineral excavation)

2C Construction/Operation of impoundments (migration barrier)

Point and non-point source pollution

4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

1A Coal mining

1B Agriculture

1C Road construction

1D Urbanization/Development General Construction

1E Silviculture

**CLASS BIVALVIA**

**Pyramid Pigtoe**

*Pleurobema rubrum*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	E	G2	S1	G2	S1

**G-Trend** Decreasing

**G-Trend** Historically this species was distributed throughout the Mississippi, Wabash,

**Comment** Tennessee, and Ohio River systems. It appears to never have been common, consisting of less than 4% of those species found in prehistoric middens (Parmalee 1967). Today the species is widely but very sporadically distributed. It has apparently been extirpated from much of its former range. Shimek (1921) reported it from the Mississippi River at Prairie du Chien, Wisconsin, but it has not been recovered since that time. Starrett (1971) did not find this species in a survey in 1966 of the Illinois River although it was known to occur there prior to 1900. It was found in the Tuscarawas River of the Muskingum River in Ohio by Hildreth (1828), Dean (1890), Sterki (1894, 1900), and Ortman (1919), but has not been recently collected there. Williams (1969) and Dames and Moore (1980) recorded it from the Ohio River, in the vicinity of Clermont County, Ohio, but an extensive survey in 1984 did not recover it (Stansbery and Cooney 1985). It has been extirpated from the Tennessee River in Alabama (Stansbery 1976). It has been extirpated from the Wabash and East Fork White rivers in Indiana, the Osage River in Missouri, the Beech Fork (Salt River) and

Licking Rivers in Kentucky, and the Stones and Holston Rivers in Tennessee (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in the Tennessee and Green Rivers (Cicerello and Schuster 2003).

**Comment**

**Habitat /** This mussel typically inhabits large rivers but may occur in medium-sized lotic

**Life History** environments. It tends to occupy riffles or shoals in relatively shallow water

and coarse-particle substrates, along sand bars, or in deep water (>4 m) with

mud and sand bottoms. Moderate to swift currents usually are associated with

these habitats (Gordon and Layzer 1989). It persists below some Tennessee

River dams. The species is critically imperiled in over half of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Green River at lock and dam 5 near Glenmore (Condition: fully supporting).

**Guilds** Medium to large streams.

## **CLASS BIVALVIA**

### **Pyramid Pigtoe**

*Pleurobema rubrum*

Statewide [PyramidPigtoe.pdf](#)

### **Map**

## **Conservation Issues**

### Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching
- 2F Riparian zone removal (Agriculture/development)
- 2G Water level fluctuations

### Biological/ consumptive uses

- 5J Incidental mortality due to commercial fishing/musseling (mortality and overharvest)

### Point and non-point source pollution

- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,

### Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Rabbitsfoot** *Quadrula cylindrica cylindrica*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	T	G3T3	S2	G3	S2

**G-Trend** Decreasing

**G-Trend** This species has a "trans-Mississippian distribution" (Stansbery 1970) and is

**Comment** sporadically distributed throughout the Mississippi, Ohio, Wabash, Cumberland, and Tennessee River drainages. Presently or formerly occurred in the following states: Alabama, Arkansas, Illinois, Indiana, Kansas, Kentucky, Louisiana, Missouri, Mississippi, North Carolina, Ohio, Oklahoma, Pennsylvania and Tennessee. It intergrades with *Q. cylindrica strigillata* in the Clinch River in Scott County, Virginia. Populations north of this in the lower Tennessee River tributaries are *Q. cylindrica strigillata* (NatureServe 2004). It has been eliminated from much of this range and is on many state endangered species lists including: Illinois, Indiana, Missouri, and Ohio (Cummings and Mayer 1992).

**S-Trend** Decreasing

**S-Trend** Sporadic nearly statewide (Cicerello and Schuster 2003).

**Comment**

**Habitat /** According to Gordon and Layzer (1989) the typical habitat for this species is

**Life History** small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Found in medium to large rivers in sand and gravel (Cummings and Mayer 1992). It has been found in depths up to 3 m (Parmalee 1967). Despite their streamlined appearance, specimens are more often found fully exposed lying on their sides on top of the substrate (NatureServe 2004). The species is critically imperiled in over two thirds of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat**

1. Green River from Green River Lake to Mammoth Cave
2. lower Tennessee River to the Ohio River and extending to the Mississippi River

Habitat fully supporting (50-90%) for both.

**Guilds** Medium to large streams.

**Statewide** [Rabbitsfoot.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Rabbitsfoot**

*Quadrula cylindrica cylindrica*

### **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)

Biological/ consumptive uses

- 5G Low population densities of hosts (mussels only)

Point and non-point source pollution

- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Rayed Bean**

*Villosa fabalis*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	X	G1G2	SX	G1	S1

**G-Trend** Decreasing

**G-Trend** Although historically widespread in the upper midwest and northeast, few

**Comment** extant populations are known. Extant populations known from 22 streams and a lake in 5 states: lower Great Lakes system and Ohio River system (Butler 2003). In Canada, only extant in the middle reach of the Sydenham River in Ontario (West et al., 2000).

**S-Trend** Decreasing

**S-Trend** Possibly extirpated. Formerly in the Ohio River and the Green River to the

**Comment** Licking River (Cicerello and Schuster 2003).

**Habitat /** Medium sized streams to medium-sized rivers in sand and gravel (Cicerello and

**Life History** Schuster 2003). The species is critically imperiled in over two thirds of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Possibly extirpated. Green River in Hart County (Condition: fully supporting).

**Guilds** Small to medium streams.

**Statewide** [RayedBean.pdf](#)

**Map**

## **Conservation Issues**

Aquatic habitat degradation

- 2C Construction/Operation of impoundments (migration barrier). NatureServe 2004

Biological/ consumptive uses

- 5G Low population densities of hosts (mussels only). NatureServe 2004

Point and non-point source pollution

- 4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. NatureServe 2004

Siltation and increased turbidity

- 1B Agriculture. NatureServe 2004

**CLASS BIVALVIA**

**Ring Pink** *Obovaria retusa*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Historically occurring throughout the Ohio, Tennessee, and Cumberland River

**Comment** systems (Origin is Ohioan). Two populations which may still be viable are in the Tennessee River below Pickwick Dam, and in the Green River at Munfordville, Kentucky (NatureServe 2004). Other recent occurrences include the middle Cumberland River and the Ohio River south of Gallipolis and the Muskingum River (NatureServe 2004). In September 1997 one live specimen was found for the first time since the 1960's in the Green River upstream of Mammoth Cave National Park, approx. 13 river miles from the Munfordville population (Triannual Unionid Report, No. 13, 1997).

**S-Trend** Decreasing

**S-Trend** Sporadic in the upper Green River (Cicerello and Schuster 2003).

**Comment**

**Habitat /** This mussel typically inhabits large rivers but may occur in medium-sized lotic

**Life History** environments. It tends to occupy riffles or shoals in relatively shallow water and coarse-particle substrates, along sand bars, or in deep water with mud and

sand bottoms with moderate to swift currents.

**Key** Key Habitat Locations (and their condition):

**Habitat**

1. Upper Green River from Mammoth Cave upstream to Hart County
2. Lower Ohio River from the Tennessee River (Kentucky Dam) to the Mississippi River

Habitat fully supporting the Green (90%), but only 50% in the Ohio.

**Guilds** Large rivers in current.

**Statewide** [RingPink.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Ring Pink**

*Obovaria retusa*

### **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging. NatureServe 2004
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation). NatureServe 2004
- 2C Construction/Operation of impoundments (migration barrier). NatureServe 2004
- 2E Stream channelization/ditching. NatureServe 2004
- 2F Riparian zone removal (Agriculture/development). NatureServe 2004
- 2G Water level fluctuations. NatureServe 2004

Point and non-point source pollution

- 4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. NatureServe 2004
- 4K Industrial waste discharge/runoff. NatureServe 2004

Siltation and increased turbidity

- 1B Agriculture. NatureServe 2004

**CLASS BIVALVIA**

**Rough Pigtoe**

*Pleurobema plenum*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	E	G1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Historically widely distributed in the Ohio, Cumberland, and Tennessee river

**Comment** drainages. Confined to under 20 sites in the Tennessee, Clinch, Cumberland, Barren and Green rivers (Ahlstedt 1984) (NatureServe 2004). Currently present below three Tennessee River mainstem dams (Pickwick, Wilson, and Gunterville) and the upper Clinch River between river miles 323 and 154. Although reported by Parmalee et al. (1980) from the middle Cumberland River between 1977 and 1979, it was not found in recent surveys by Tennessee Valley Authority (1976) or Sickel and Chandler (1996). Present in the Green River, Kentucky between locks 4 and 5 and in the Barren River below Lock and Dam 1 (Ahlstedt, 1984).

**S-Trend** Decreasing

**S-Trend** Sporadic in the Green and Barren Rivers (Cicerello and Schuster 2003).

**Comment**

**Habitat /** Found in medium to large rivers in sand, gravel, and cobble substrates in shoals.

**Life History** Occasionally found on flats and muddy sand (Gordon and Layzer 1989;

Ahlstedt 1984).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Green River at Glenmore (lock and dam 5; Condition: fully supporting).

**Guilds** Medium to large streams.

**Statewide** [RoughPigtoe.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Rough Pigtoe**

*Pleurobema plenum*

### **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching
- 2F Riparian zone removal (Agriculture/development)
- 2G Water level fluctuations

Point and non-point source pollution

- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4G Chemical spills and contaminants (applied and accidental)
- 4K Industrial waste discharge/runoff

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Round Hickorynut**

*Obovaria subrotunda*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	N	G4	S4S5	G4	S4

**G-Trend** Decreasing

**G-Trend** Ranges from Ontario, through Michigan, west to Illinois and Louisiana, east to

**Comment** Georgia and Pennsylvania. Sporadic in distribution, disappearing from many areas. Endangered and likely extirpated from Illinois. Threatened in Michigan. In the Midwest, the round hickorynut is endangered in Illinois and Michigan and is absent from many sites within its former range in Indiana (Cummings and Mayer 1992; Cummings pers. comm.). This mussel has not been collected alive in Illinois in over 20 years and it is likely extirpated from the state (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Occasional to sporadic in the lower Cumberland and eastward (Cicerello and

**Comment** Schuster 2003).

**Habitat /** Found in medium-sized streams in sand and gravel in areas with moderate flow

**Life History** (Cummings and Mayer 1992). The species is imperiled in two thirds of its range.

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Buck Creek in Pulaski County
  2. Red Bird River (Upper Kentucky River)
  3. Red River (in Daniel Boone National Forest, Upper Kentucky River).

Habitat fully supporting (60-80%) for each.

**Guilds** Medium to large streams.

**Statewide** [RoundHickorynut.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Round Hickorynut**

*Obovaria subrotunda*

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching
- 2F Riparian zone removal (Agriculture/development)
- 2G Water level fluctuations

Biological/ consumptive uses

- 5H Isolated populations (low gene flow)

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts
- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4D Oil and gas drilling operations associated runoff
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

Siltation and increased turbidity

- 1A Coal mining
- 1B Agriculture

1C Road construction

1D Urbanization/Development General Construction

1E Silviculture

**CLASS BIVALVIA**

**Salamander Mussel**

*Simpsonaias ambigua*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	T	G3	S2S3	G3	S2

**G-Trend** Decreasing

**G-Trend** Clarke (1985) gave the geographical records for this species. It is known from

**Comment** the Lake St. Clair, Lake Huron, and Lake Erie drainages; and from the Ohio River System, the Cumberland River System (Red River, Kentucky), and the upper Mississippi River System (Illinois, Iowa, Wisconsin, Missouri and Arkansas). Its distribution in part is apparently related to the distribution of its glochidial host, the mudpuppy (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in the upper Green River and eastward (Cicerello and Schuster 2003).

**Comment**

**Habitat /** Although occasionally found elsewhere, there is little doubt the preferred

**Life History** habitat is in sand or silt under flat stones in areas of a swift current (Call 1900; Buchanan 1980; Clarke 1985; Oesch 1995). Call (1900) reported over 200 individuals from a single square foot under a rock. Frierson (1927) remarked that it was "rarely found, but in abundance whenever found; a hundred have been taken from a square foot." Its presence there is presumably linked to the

Mudpuppy (NatureServe 2004). The species is critically imperiled in over three fourths of its range.

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Red River in the Red River Gorge
  2. Rolling Fork River upstream of New Haven

Habitat is fully supporting (55-80%) for both.

**Guilds** Small to medium streams.

**Statewide** [SalamanderMussel.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Salamander Mussel**

*Simpsonaias ambigua*

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching
- 2F Riparian zone removal (Agriculture/development)
- 2G Water level fluctuations

Biological/ consumptive uses

- 5H Isolated populations (low gene flow)

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts
- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4D Oil and gas drilling operations associated runoff
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Scaleshell** *Leptodea leptodon*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	X	G1	SX	G1	S1

**G-Trend** Decreasing

**G-Trend** Historically this species was distributed through 54 streams in much of the

**Comment** Interior Basin and a portion of the St. Lawrence drainage. Within the latter, records are primarily from the Lake Erie basin incorporating portions of western New York, southern Ontario, and southern Michigan. Interior Basin records are from streams in Ohio, Kentucky, Tennessee, Indiana, Illinois, southern Wisconsin, Iowa, Missouri, Kansas, Arkansas, and Oklahoma. The only known extant populations are now restricted 13 streams in the Interior Highland divisions in Missouri, Arkansas, and Oklahoma (see Oesch 1995, Harris and Gordon 1987, Cummings and Mayer 1992, Parmalee and Bogan 1998). An additional site, the lower Missouri River between the Gavin's Point Dam and the mouth near St. Louis, was discovered in 1990 (Hoke 2000) bringing the total to 14 (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Formerly in the Ohio, Green, Kentucky, and upper Cumberland (below

**Comment** Cumberland Falls) rivers (Cicerello and Schuster 2003).

**Habitat /** Occurs in riffles with moderate to high gradients in creeks to large rivers.

**Life History** Typically associated with riffles, relatively strong currents, and substrate of mud, sand, or assemblages of gravel, cobble, and boulder. It has been found completely buried in the substrate down to depths of 15 cm (Oesch 1995).

Occurs in medium to large rivers with low to moderate gradients in a variety of stream habitats including gravel, cobble, boulders, and occasionally mud or sand substrates (Buchanan 1980; Oesch 1995). Restricted to rivers with relatively good water quality (Oesch 1995) in stretches with stable channels (Buchanan 1980).

The species is critically imperiled throughout its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Extirpated from Kentucky. Last site collected was in the Green River in Hart County (Condition: fully supporting).

**Guilds** Large rivers in current.

**Statewide** [Scaleshell.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Scaleshell**

*Leptodea leptodon*

### **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging. NatureServe 2004
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation). NatureServe 2004
- 2C Construction/Operation of impoundments (migration barrier). NatureServe 2004
- 2E Stream channelization/ditching. NatureServe 2004
- 2F Riparian zone removal (Agriculture/development). NatureServe 2004
- 2G Water level fluctuations. NatureServe 2004

Biological/ consumptive uses

- 5H Isolated populations (low gene flow). NatureServe 2004

Point and non-point source pollution

- 4B Waste water discharge (e.g., sewage treatment). NatureServe 2004
- 4C Toxic chemical spills. NatureServe 2004
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. NatureServe 2004
- 4F Urban runoff. NatureServe 2004
- 4G Chemical spills and contaminants (applied and accidental). NatureServe

4K Industrial waste discharge/runoff. NatureServe 2004

Siltation and increased turbidity

1B Agriculture. NatureServe 2004

1E Silviculture. NatureServe 2004

**CLASS BIVALVIA**

**Sheepnose** *Plethobasus cyphus*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	E	G3	S1	G3	S1

**G-Trend** Decreasing

**G-Trend** Historically occurred throughout much of the Mississippi River system with

**Comment** the exception of the upper Missouri River system and most lowland tributaries in the lower Mississippi River system. Known from 77 streams historically in 15 states in the Mississippi, Ohio, Cumberland, Tennessee, and Ohio main stems, and scores of tributary streams rangewide (Butler 2003) (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic nearly statewide (Cicerello and Schuster 2003).

**Comment**

**Habitat /** Although it does inhabit medium-sized rivers, this mussel generally has been

**Life History** considered a large-river species. It may be associated with riffles and gravel/cobble substrates but usually has been reported from deep water (>2 m) with slight to swift currents and mud, sand, or gravel bottoms (Gordon and Layze, 1989). It also appears capable of surviving in reservoirs, such as upper Chickamauga Reservoir immediately below Watts Bar Dam (NatureServe 2004).

This species is critically imperiled throughout all of its range (NatureServe 2004).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Green River from Mammoth Cave upstream to Hart County (Condition: fully supporting).

**Guilds** Large rivers in current.

**Statewide** [Sheepnose.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Sheepnose**

*Plethobasus cyphus*

### **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching

Point and non-point source pollution

- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Slabside Pearlymussel**

*Lexingtonia dolabelloides*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
C	X	G2	SX	G2	S1

**G-Trend** Decreasing

**G-Trend** Generally has been considered a Tennessee River endemic (Simpson 1914;

**Comment** Bogan and Parmalee 1983). As a result of the failure of Wilson and Clark (1914) to collect it and the lack of other locality records, Lea's (1871) report of "UNIO SUBGLOBOSUS" (junior synonym of L.DOLABELLIODES, FIDE Simpson, 1914) from the Cumberland River in Nashville has been discounted. However, recent finds of relict specimens (e.g., Parmalee et al. 1980; Schuster 1988) confirm it as a historical comment of the Cumberland River fauna (Starnes and Bogan 1988, Gordon and Layzer 1989). Apparently extirpated from the entire Cumberland River system. Most historical records are from the Tennessee River system and indicate that it was a fairly common species found throughout the Cumberlandian region of the drainage. This included areas from the Mussel Shoals vicinity into headwater tributaries in Virginia and the Duck River drainage. Populations remain in nine streams in the Tennessee River system: the Powell River, Clinch River, North Fork Holston River, Big Moccasin Creek, Middle Fork Holston River, Hiwasee River, Paint Rock River, Larkin Fork, Estill Fork, Hurricane Creek, Elk river, Bear Creek, and Duck

River (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Probably extirpated. Formerly in the lower Cumberland River (Cicerello and

**Comment** Schuster 2003).

**Habitat /** Occurs in moderate to high gradient riffles systems in creeks to large rivers.

**Life History** Generally found at depths <1, moderate to swift current velocities, and substrates from coarse sand to heterogeneous assemblages of larger sized particles. The species is imperiled throughout its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Probably extirpated. Last record from the 1980's in the lower Cumberland River in southwestern Kentucky (Condition: fully supporting at 76%).

**Guilds** Lowland Streams in riffles.

**Statewide** [SlabsidePearlymussel.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Slabside Pearlymussel**

*Lexingtonia dolabelloides*

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts
- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4D Oil and gas drilling operations associated runoff
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Slippershell Mussel**

*Alasmidonta viridis*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	N	G4G5	S4S5	G4	S4

**G-Trend** Decreasing

**G-Trend** Upper Mississippi River drainage; Ohio, Cumberland, and Tennessee Rivers;

**Comment** lower and middle sections of the St. Lawrence River systems: Lake Huron, Lake St. Slair, and Lake Erie drainages in Canada (Parmalee and Bogan 1998).

**S-Trend** Decreasing

**S-Trend** Generally distributed to occasional in the lower Cumberland River and eastward

**Comment** (Cicerello and Schuster 2003).

**Habitat / species** Small streams in mud, sand, or gravel (Cicerello and Schuster 2003). The

**Life History** is critically imperiled in over two thirds of its range. Threats: Threatened by habitat modification, sedimentation, gravel mining, and water quality degradation are the major threats to this species.

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Red River in the Red River Gorge area
  2. Salt River tributaries (e.g., Guist Creek, south of Shelbyville)
  3. small tributaries to the Licking River

Habitat fully supporting 33-80% for each.

**Guilds** Small to medium streams.

**Statewide** [SlippershellMussel.pdf](#)

**Map**

## **CLASS BIVALVIA**

### **Slippershell Mussel**

*Alasmidonta viridis*

### **Conservation Issues**

#### Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)

#### Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts
- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4D Oil and gas drilling operations associated runoff
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

#### Siltation and increased turbidity

- 1B Agriculture
- 1C Road construction
- 1D Urbanization/Development General Construction

**CLASS BIVALVIA**

**Snuffbox** *Epioblasma triquetra*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	E	G3	S1	G3	S1

**G-Trend** Decreasing

**G-Trend** It was historically widespread in the upper Mississippi and Ohio River

**Comment** drainages. It was widespread but never abundant in the Tennessee River system. It has been drastically reduced in range and is endangered in many states where it occurs. Extant populations can still be found in Wisconsin, Illinois, Indiana, Kentucky, Michigan, Ohio, Pennsylvania, Tennessee, and West Virginia. Most populations are small and geographically isolated from one another (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in the upper Green River and eastward (Cicerello and Schuster 2003).

**Comment**

**Habitat /** Found in riffles with stony or sandy bottoms, in swift currents, usually deeply

**Life History** buried (Baker 1928). The species is critically imperiled in over two thirds of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Red River in the Red River Gorge (Kentucky River System)

2. Red Bird River (Kentucky River System)
3. Tygart's Creek in northeastern Kentucky.

Habitat fully supporting (74-88%) for each.

**Guilds** Upland streams in riffles.

**Statewide** [Snuffbox.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Snuffbox**

*Epioblasma triquetra*

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching
- 2F Riparian zone removal (Agriculture/development)
- 2G Water level fluctuations

Biological/ consumptive uses

- 5H Isolated populations (low gene flow)

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts
- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4D Oil and gas drilling operations associated runoff
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Spectaclecase** *Cumberlandia monodonta*

<b>Federal</b>	<b>Heritage</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank</b>	<b>SRank</b>
<b>Status</b>	<b>Status</b>			<b>(Simplified)</b>	<b>(Simplified)</b>
N	E	G2G3	S1	G2	S1

**G-Trend** Decreasing

**G-Trend** Historically occurred throughout much of the Mississippi River system with

**Comment** the exception of the upper Missouri River system, uppermost Ohio River system, Cumberland and Tennessee River systems, and some tributaries in the lower Mississippi region of Arkansas. Historically from 45 streams in 15 states including: upper Mississippi River system (Mississippi River); lower Missouri River system (Missouri River?); Ohio River system (Ohio River); Cumberland River system (Cumberland River); Tennessee River system (Tennessee River); and lower Mississippi River system (Mulberry, Ouachita Rivers) (Butler 2003).

**S-Trend** Decreasing

**S-Trend** Sporadic in the upper Green River (Cicerello and Schuster 2003).

**Comment**

**Habitat /** Generally found in areas with strong currents. Preferred habitat is medium-sized

**Life History** streams (Dennis 1984). In medium rivers, substrates usually are coarser and include cobble, gravel, cracks in bedrock. It tends to be deeply buried in the

substrate, often considerably below the surface, and has been found under large slabs of rock or between tree roots. In large rivers, substrates are typically finer and include sand or mud. May be associated with shoals, bars and islands.

The species is critically imperiled in over two thirds of its range.

- Key** Key Habitat Locations (and their condition):
- Habitat** 1. Upper Green River in Edmonson and Hart Counties (Condition: fully supporting at 80%).
- Guilds** Medium to large streams.
- Statewide** [Spectaclecase.pdf](#)
- Map**

# **CLASS BIVALVIA**

**Spectaclecase**

*Cumberlandia monodonta*

## **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts
- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4D Oil and gas drilling operations associated runoff
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

Siltation and increased turbidity

- 1B Agriculture
- 1E Silviculture

**CLASS BIVALVIA**

**Tan Riffleshell**

*Epioblasma florentina walkeri*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE	E	G1T1	S1	G1	S1

**G-Trend** Decreasing

**G-Trend** Known from the Cumberland and Tennessee River systems (NatureServe 2004).

**Comment**

**S-Trend** Decreasing

**S-Trend** Sporadic in the upper Cumberland River below Cumberland Falls (Cicerello and

**Comment** Schuster 2003).

**Habitat /** Found in headwaters, riffles, and shoals in sand and gravel substrates. (Bogan

**Life History** and Parmalee 1983). The species is critically imperiled throughout all of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Big South Fork Cumberland River from the Tennessee State line to Bear Creek (Condition: fully supporting at 90%).

**Guilds** Upland streams in riffles.

**Statewide** [TanRiffleshell.pdf](#)

**Map**

## **CLASS BIVALVIA**

**Tan Riffleshell**

*Epioblasma florentina walkeri*

### **Conservation Issues**

Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching
- 2F Riparian zone removal (Agriculture/development)
- 2G Water level fluctuations

Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts
- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4D Oil and gas drilling operations associated runoff
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

Siltation and increased turbidity

- 1A Coal mining
- 1B Agriculture
- 1C Road construction
- 1D Urbanization/Development General Construction

1E Silviculture

1F Recreational activities (atv, horseback riding)

**CLASS BIVALVIA**

**Tennessee Clubshell** *Pleurobema oviforme*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
N	E	G3	S1	G3	S1

**G-Trend** Decreasing

**G-Trend** Historically inhabited most of Cumberlandian region of the Tennessee River

**Comment** system. Presently scattered in small disjunct populations in the Powell, Clinch, Holston, elk, Paint Rock, and Duck river systems and a few tributaries in the upper Cumberland River. A few, possibly nonreproducing populations apparently persist in some reservoir situations. Previous reports for this species from the Cumberland River system appear to be either *P. clava*, or a different species (NatureServe 2004).

**S-Trend** Decreasing

**S-Trend** Sporadic in the lower and upper Cumberland River below Cumberland Falls

**Comment** (Cicerello and Schuster 2003).

**Habitat /** Found in the vicinity of riffles and shoals in substrates composed of sand/gravel

**Life History** mixtures, occasionally mud or in cracks between bedrock slabs. It does not usually tolerate more than moderate depth, although Ahlstedt (1989) found it in fairly deep water habitats below Watts Bar Dam. In creeks and small rivers, it may be found immediately above riffles or in flats. Although there may be

seasonal periods of calm water, *P. oviforme* usually occurs in areas of at least moderately flowing water. This species is critically imperiled to imperiled throughout all of its range.

**Key** Key Habitat Locations (and their condition):

- Habitat**
1. Buck Creek in Pulaski County
  2. Horse Lick Creek
  3. Big South Fork Cumberland River near the Kentucky/Tennessee state line

Habitat is fully supporting (67-80%) for each.

**Guilds** Upland streams in riffles.

**Statewide** [TennesseeClubshell.pdf](#)

**Map**

# **CLASS BIVALVIA**

**Tennessee Clubshell**

*Pleurobema oviforme*

## **Conservation Issues**

### Aquatic habitat degradation

- 2B Gravel/sand removal or quarrying (e.g., mineral excavation). NatureServe 2004
- 2C Construction/Operation of impoundments (migration barrier). NatureServe 2004
- 2E Stream channelization/ditching. NatureServe 2004
- 2F Riparian zone removal (Agriculture/development). NatureServe 2004
- 2G Water level fluctuations. NatureServe 2004

### Point and non-point source pollution

- 4A Acid mine drainage other coal mining impacts . NatureServe 2004
- 4B Waste water discharge (e.g., sewage treatment). NatureServe 2004
- 4C Toxic chemical spills. NatureServe 2004
- 4D Oil and gas drilling operations associated runoff. NatureServe 2004
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. NatureServe 2004
- 4F Urban runoff. NatureServe 2004
- 4G Chemical spills and contaminants (applied and accidental). NatureServe

### Siltation and increased turbidity

- 1A Coal mining. NatureServe 2004

- 1B Agriculture. NatureServe 2004
- 1C Road construction. NatureServe 2004
- 1D Urbanization/Development General Construction. NatureServe 2004
- 1E Silviculture. NatureServe 2004

**CLASS BIVALVIA**

**Texas Lilliput**

*Toxolasma texasiensis*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	E	G4	S1	G4	S1

**G-Trend** Decreasing

**G-Trend** The species ranges from the southern coast of Texas, east to western

**Comment** Mississippi, up the Mississippi River embayment through Louisiana, eastern Arkansas, and Missouri to southern Illinois, Indiana, and western Tennessee (Parmalee and Bogan 1998).

**S-Trend** Decreasing

**S-Trend** Sporadic in the Mississippi River to the Tradewater River (Cicerello and

**Comment** Schuster 2003).

**Habitat /** Small streams and small rivers in silt, mud, or sand, and wetlands (Cicerello and

**Life History** Schuster 2003).

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Small tributaries to the Mississippi River in Fulton, Hickman, and Carlisle Counties in extreme western Kentucky (Condition: partially supporting at 37-64%).

**Guilds** Lowland Streams in slackwater.

**Statewide** [TexasLilliput.pdf](#)

## Map

# **CLASS BIVALVIA**

**Texas Lilliput**

*Toxolasma texasiensis*

## **Conservation Issues**

Aquatic habitat degradation

- 2A Navigational dredging/Commercial dredging
- 2B Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2C Construction/Operation of impoundments (migration barrier)
- 2E Stream channelization/ditching

Point and non-point source pollution

- 4B Waste water discharge (e.g., sewage treatment)
- 4C Toxic chemical spills
- 4E Agricultural runoff – including fertilizers/animal waste, herbicides,
- 4F Urban runoff
- 4G Chemical spills and contaminants (applied and accidental)

Siltation and increased turbidity

- 1B Agriculture

**CLASS BIVALVIA**

**Winged Mapleleaf**

*Quadrula fragosa*

<b>Federal Status</b>	<b>Heritage Status</b>	<b>GRank</b>	<b>SRank</b>	<b>GRank (Simplified)</b>	<b>SRank (Simplified)</b>
LE,XN	X	G1	SX	G1	N

**G-Trend** Decreasing

**G-Trend** The only known viable populations are from one section of the lower St. Croix

**Comment** River in Wisconsin and the Ouachita River in Arkansas. Hove et al. (2003) also note the Kiamachi River in Oklahoma. Museum records indicate that it was distributed throughout a considerable portion of the Interior Basin: Ohio and Sciota rivers (Ohio), Wabash and White rivers (Indiana), Sangamon River (Illinois), Tennessee and Duck rivers (Tennessee), St. Croix and Wisconsin rivers (Wisconsin), Cedar, Iowa, Mississippi, and Racoon rivers (Iowa), Little Fox River (Missouri), and Fall and Neosho rivers (Kansas). All museum vouchers from the Cumberland River (including those of Wilson and Clarck, 1914) are misidentified *Quadrula quadrula*. A single specimen tentatively identified as *Q. fragosa* recently has been collected from the Ohio River adjacent to Kentucky (Cicerello, Kentucky State Nature Preserves Commission, pers. comm.), but the condition of the shell and any possible population is not known. Hove et al. (2003) have determined that the historical range of this species is greater than once thought; with a historic range of at least 50 linear km in the St. Croix River mostly downstream of the St. Croix Dam (the present

range is much less).

**S-Trend** Decreasing

**S-Trend** Extirpated. Formerly in the Ohio River and possibly in the lower Cumberland

**Comment** River (Cicerello and Schuster 2003).

**Habitat /** Appears to have inhabited medium-sized and large rivers. Baker (1928) lists its

**Life History** habitat as "mud bottom in water 2m or more in depth". Locality records

indicate that it also inhabited riffle areas with substantially shallower water depths and substrates ranging from sand and gravel to mixture including some cobble and boulder sized particles. This species is critically imperiled throughout all of its range.

**Key** Key Habitat Locations (and their condition):

**Habitat** 1. Extirpated. Formerly in the Ohio River and possibly in the lower Cumberland River (Condition: partially supporting at 45%).

**Guilds** Medium to large streams.

# CLASS BIVALVIA

Winged Mapleleaf

*Quadrula fragosa*

Statewide [WingedMapleleaf.pdf](#)

Map

## Conservation Issues

Aquatic habitat degradation

2B Gravel/sand removal or quarrying (e.g., mineral excavation). NatureServe 2004

2C Construction/Operation of impoundments (migration barrier). NatureServe 2004

Biological/ consumptive uses

5J Incidental mortality due to commercial fishing/musseling (mortality and overharvest). NatureServe 2004

Point and non-point source pollution

4B Waste water discharge (e.g., sewage treatment). NatureServe 2004

4C Toxic chemical spills. NatureServe 2004

4E Agricultural runoff – including fertilizers/animal waste, herbicides, pesticides. NatureServe 2004

4F Urban runoff. NatureServe 2004

4G Chemical spills and contaminants (applied and accidental). NatureServe

Siltation and increased turbidity

1B Agriculture. NatureServe 2004

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